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REMARKS

Applicants concurrently file herewith an Excess Claim Fee Payment Letter for one (1) excess independent claim, and corresponding excess claim fee.

Claims 1-8 and 10-24 are all the claims presently pending in the application. Claims 1, 5 and 19 have been amended to more particularly define the claimed invention. Claim 13 has been amended into independent form. Claim 9 has been canceled without prejudice or disclaimer.

Entry of this Amendment is believed proper since no new issues are being presented to the Examiner that would require further consideration and/or search. Furthermore, claims 1, 5 and 19 have merely been amended to incorporate subject matter that was previously cited in a dependent claim.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicants appreciate the Examiner's indication that claims 2, 6, 23 and 24 are allowed and that claim 13 would be allowable if rewritten in independent form. Accordingly, Applicants have amended claim 13 into independent form. Applicant submits, however, that all of claims 1-8 and 10-24 are allowable.

Claims 1, 9-12, 14 and 19-21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Watanabe et al. (U.S. Patent Application Publication No. 2002/0174542; hereinafter "Watanabe"). Claims 5, 15 and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Nakamura et al. (U.S. Patent No. 6,945,632; hereinafter "Nakamura"). Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Watanabe in

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view of Goto et al. (U.S. Patent Application Publication No. 2003/0067525; hereinafter "Goto"). Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe in view of Iric et al. (U.S. Patent Application Publication No. 2002/0180843; hereinafter "Iric"). Claims 17 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe. Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Nakamura in view of Iric. Claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Nakamura in view of Goto. Claim 18 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Nakamura in view of Watanabe.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention of exemplary claim 1 (and claims 5 and 19) provides an ink jet head wherein the longitudinal vibration mode piezoelectric element expands or contracts when a potential difference is applied to the piezoelectric element (e.g., see Application at page 4, lines 10-22). This feature is important for providing an ink jet head having a high reliability, which allows efficient deformation of the vibrating plate even if the vibrating plate has a high density (see Application at page 4, lines 5-9).

II. THE PRIOR ART REFERENCES

A. The Nakamura Reference

The Examiner alleges that Nakamura teaches the claimed invention of claims 5, 15 and 16. Applicants submit, however, that there are features of the claimed invention that are neither taught nor suggested by Nakamura.

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That is, Nakamura does not teach or suggest “*wherein the longitudinal vibration mode piezoelectric element expands or contracts when a potential difference is applied to the piezoelectric element*”, as recited in claim 5.

The Examiner attempts to rely on Figures 3-11, and column 10, lines 53-67 of Nakamura to support his allegations. The Examiner, however, is clearly incorrect.

Indeed, nowhere in these figures nor this passage (nor anywhere else for that matter) does Nakamura teach or suggest an ink jet head wherein the longitudinal vibration mode piezoelectric element expands or contracts when a potential difference is applied to the piezoelectric element. Indeed, Nakamura not even mention a longitudinal vibration mode piezoelectric element, let alone teach or suggest a longitudinal vibration mode piezoelectric element that expands or contracts.

That is, Nakamura merely teaches a piezoelectric element (see Nakamura at column 10, lines 53-67). Nowhere, however, does Nakamura provide any support for the Examiner’s allegation that the piezoelectric element is a longitudinal vibration mode piezoelectric element.

In stark contrast, the claimed invention may include a longitudinal vibration mode piezoelectric element. The Application discloses that in the case of a longitudinal vibration mode involving the direct use of expansion and contraction of the piezoelectric element for the deformation of the vibration plate, as recited in the claimed invention, the effect of deforming the ink chamber is great (e.g., see Application at page 8, lines 12-15). This feature is not recognized by Nakamura.

Therefore, Applicants submit that there are features of the claimed invention that are not taught or suggested by Nakamura. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

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B. The Watanabe Reference

The Examiner alleges that Watanabe teaches the claimed invention of claims 1, 9-12, 14 and 19-21. Furthermore, the Examiner alleges that the claimed invention of claims 17 and 22 would have been obvious in view of Watanabe. Still furthermore, the Examiner alleges that Watanabe would have been combined with Nakamura to teach the claimed invention of claim 18. Applicants submit, however, that there are features of the claimed invention that are neither taught nor suggested (nor made obvious) by Watanabe (taken alone or in combination with Nakamura).

That is, Watanabe does not teach or suggest *"wherein the longitudinal vibration mode piezoelectric element expands or contracts when a potential difference is applied to the piezoelectric element"*, as recited in claim 1, and similarly recited in claims 5 and 19.

The Examiner attempts to rely on Figures 1 and 2, and paragraphs [0053]-[0055] and [0057] of Watanabe to support his allegations. The Examiner, however, is clearly incorrect.

Indeed, nowhere in these figures nor these passages (nor anywhere else for that matter) does Watanabe teach or suggest an ink jet head wherein the longitudinal vibration mode piezoelectric element expands or contracts when a potential difference is applied to the piezoelectric element. Indeed, Watanabe teaches a bimetal element.

That is, Watanabe teaches that a piezoelectric element is applied a voltage through the vibration plate. A portion of the vibration plate corresponding to the pressure chamber deforms causing ink to be emitted from an emission opening. When a pulse-like voltage is applied, the piezoelectric element shrinks in the crosswise direction. Thus, the portion of the vibration plate corresponding to the piezoelectric element is deflected and deformed by the bimetal effect (see Watanabe at paragraph [0054]).

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In stark contrast, the claimed invention may include a longitudinal vibration mode piezoelectric element. The Application discloses that when the vibration plate is deformed using a deflection mode piezoelectric element as represented by a bimetal system, as in Watanabe, the effect on the adjacent ink chambers is small because the individual piezoelectric elements are separated from each other (e.g., see Application at page 8, lines 7-11).

In stark contrast, in the case of a longitudinal vibration mode involving the direct use of expansion and contraction of the piezoelectric element for the deformation of the vibration plate, as recited in the claimed invention, the effect of deforming the ink chamber is great (e.g., see Application at page 8, lines 12-15). This feature is not recognized by Watanabe.

In the rejection of dependent claim 9 (which previously recited the above claim limitation), the Examiner alleges that Watanabe teaches a longitudinal vibration mode piezoelectric element that expands or contracts when a potential difference is applied to the element (see Office Action dated September 8, 2006 at page 3). The Examiner attempts to rely on paragraphs [0016] and [0025] of Watanabe to support his allegations. The Examiner, however, is clearly incorrect.

That is, these passages of Watanabe merely indicate that the piezoelectric element is deformed. As explained above, when the vibration plate is deformed using a deflection mode piezoelectric element as represented by a bimetal system, as in Watanabe, the effect on the adjacent ink chambers is small because the individual piezoelectric elements are separated from each other. There is no teaching in Watanabe that the piezoelectric element expands or contracts.

Therefore, Applicants submit that there are features of the claimed invention that are not taught or suggested by Watanabe.

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Furthermore, Watanabe clearly fails to make up the deficiencies of Nakamura, which, as detailed in section A, above, also fails to teach or suggest this feature of the claimed invention.

Therefore, Watanabe (taken alone or in combination with Nakamura) fails to teach or suggest (nor make obvious) each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

C. The Goto Reference

The Examiner alleges that Goto would have been combined with Watanabe to teach the claimed invention of claim 4. Furthermore, the Examiner alleges that Goto would have been combined with Nakamura to teach the claimed invention of claim 8. Applicants submit, however, that, even if combined, the Examiner's alleged combination of references would not teach or suggest (nor make obvious) each and every feature of the claimed invention.

That is, neither Goto nor Watanabe nor Nakamura, nor any combination thereof, teaches or suggests "*wherein the longitudinal vibration mode piezoelectric element expands or contracts when a potential difference is applied to the piezoelectric element*", as recited in claim 1, and similarly recited in claims 5 and 19.

Indeed, as detailed in sections A and B, above, neither Watanabe nor Nakamura teaches or suggests this feature. Furthermore, Applicants submit that Goto does not make up the deficiencies of Watanabe and Nakamura.

Indeed, nowhere does Goto teach or suggest an ink jet head wherein the longitudinal vibration mode piezoelectric element expands or contracts when a potential difference is applied to the piezoelectric element. The Examiner does not even allege that Goto teaches or suggests this feature. The Examiner merely alleges that Goto teaches that it is known to provide a solution having a viscosity from 5 to 25 mPa.s.

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Thus, Goto fails to make up the deficiencies of Watanabe and Nakamura.

Therefore, Applicants submit that, even if combined, the alleged combination of references would not teach or suggest (nor make obvious) each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

D. The Irie Reference

The Examiner alleges that Irie would have been combined with Watanabe to teach the claimed invention of claim 3. Furthermore, the Examiner alleges that Irie would have been combined with Nakamura to teach the claimed invention of claim 7. Applicants submit, however, that, even if combined, the Examiner's alleged combination of references would not teach or suggest (nor make obvious) each and every feature of the claimed invention.

That is, neither Irie nor Watanabe nor Nakamura, nor any combination thereof, teaches or suggests "*wherein the longitudinal vibration mode piezoelectric element expands or contracts when a potential difference is applied to the piezoelectric element*", as recited in claim 1, and similarly recited in claims 5 and 19.

Indeed, as detailed in sections A and B, above, neither Watanabe nor Nakamura teaches or suggests this feature. Furthermore, Applicants submit that Irie does not make up the deficiencies of Watanabe and Nakamura.

The Examiner attempts to rely on Irie as teaching that it is known to use a metal vibration plate in an ink jet head. The Examiner attempts to rely on paragraph [0184] of Irie to support his allegations.

However, nowhere does Irie teach or suggest an ink jet head wherein the longitudinal vibration mode piezoelectric element expands or contracts when a potential difference is applied to the piezoelectric element. Indeed, the Examiner does not even allege that Irie

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teaches or suggests this feature. The Examiner merely alleges, as indicated above, that Irie teaches that it is known to use a metal vibration plate in an ink jet head.

Thus, Irie fails to make up the deficiencies of Watanabe and Nakamura.

Therefore, Applicants submit that, even if combined, the alleged combination of references would not teach or suggest (nor make obvious) each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

III. FORMAL MATTERS AND CONCLUSION

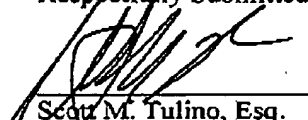
In view of the foregoing, Applicant submits that claims 1-8 and 10-24, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Date: November 30, 2006

Respectfully Submitted,



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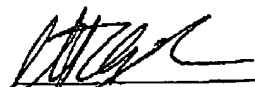
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I hereby certify that I am filing this paper via facsimile, to Group Art Unit 2861, at
(571) 273-8300, on November 30, 2006.

Respectfully Submitted,

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